

Application No.: 10/650,412

Docket No.: HO-P02190US1

**REMARKS**

Claims 21-40 are presently pending. Claim 20 has been canceled without prejudice and without acquiescence and claims 41-52 have been canceled as being drawn to a non-elected invention. Claim 22 has been amended into independent form and claims 23, 25, 26, 33, 34, 36 have been amended to dependent from new independent claim 22. Applicants retain the right to file a continuation and/or divisional application on any canceled subject matter. Applicants assert that no new subject matter has been added.

The issues outstanding in this application are as follows:

- Claims 19, 22-25 and 33-38 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sheppard, Jr et al (US 6,143, 247) in view of Mian et al. (US 6,319,469) and Zuk et al. (WO 97/07993);
- Claims 21, 26 and 29-32 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sheppard, Jr et al (US 6,143, 247) in view of Mian et al. (US 6,319,469) and Zuk et al. (WO 97/07993) taken further in view of Chen et al. (US 5,800,778).
- Claims 27 and 29 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sheppard, Jr et al (US 6,143, 247) in view of Mian et al. (US 6,319,469), Zuk et al. (WO 97/07993) and Chen et al. (US 5,800,778) taken further in view of Wolfe et al. (US 5,190,879).
- Claims 39 and 40 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sheppard, Jr et al (US 6,143, 247) in view of Mian et al. (US 6,319,469), Zuk et al. (WO 97/07993) taken further in view of Cook (WO9426413).

Applicants respectfully traverse the outstanding rejections, and Applicants respectfully request reconsideration and withdrawal thereof in light of the amendments and remarks contained herein.

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A. Claim 20, 22-26, 31, 33, 36, and 42-47

Claims 19, 22-25 and 33-38 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sheppard, Jr et al. (US 6,143, 247) in view of Mian et al. (US 6,319,469) and Zuk et al. (WO 97/07993). Applicants respectfully traverse.

Firstly, Applicants assume that the Examiner is referring to claim 20, since claim 19 was previously canceled. Thus, without agreeing to the substance of the Examiner's rejection and in order to advance the prosecution of the present invention, Applicants have canceled claim 20 without prejudice and without acquiescence. Claim 22 has been made into an independent claim.

Applicants respectfully remind the Examiner that section 103 requires consideration of the claimed invention "as a whole." This "as a whole" requirement prevents evaluation of the invention part by part, in hindsight. *Envtl. Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 698 (Fed. Cir. 1983). It appears that the Examiner has cited Sheppard and Mian because they mention valving in a device and combined it with Zuk because it mentions a hydrophobic treatment of channels and chambers. Applicants contend that neither of these references either separately or together teach the device having a hydrophobic valve which valve comprises a localized region of hydrophobicity within a chamber or channel. Thus, Applicants respectfully request that the Examiner consider the invention "as a whole," instead of its parts.

Turning to the references, the Examiner indicates that neither Sheppard nor Mian teach or suggest a hydrophobic valve. However, the Examiner states that one of skill in the art would be capable of combining the hydrophobic treatment of channels and chambers of Zuk with the device of Sheppard and Mian to produce the claimed invention. Applicants assert that the method of Zuk is used to render all the inner surfaces of the flowpaths and chambers hydrophobic such that an introduced liquid aliquot will bead on the surface until an external force is applied, thus Zuk desires to achieve fluid retention in the chambers and flowpaths until an external force is applied (See page 5, lines 1-25, page 9, lines 17-33 and page 10, lines 1-6). This is not similar to the present invention, if anything, this is the opposite of the present invention. In the present invention, the hydrophobicity is localized

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within a chamber or a channel. Thus, the present invention is capable of controlling fluid flow without beading.

As the Examiner has indicated neither Sheppard nor Mian teach or suggest a hydrophobic valve as defined according to the present claims. Zuk does not remedy this defect. The main focus of Zuk is to retain fluids within the flowpaths and chambers. This is accomplished by treating the entire surface of the flowpaths and chambers such that the surfaces are hydrophobic. By utilizing completely hydrophobic flowpaths and chambers, the fluid beads and, thus is retained. The mechanism is by beading. This is opposite of the present invention in which there is a localized region of hydrophobicity creating a hydrophobic valve thereby preventing transport of the liquid until a driving force is applied. No beading is used. Thus, one of skill in the art would not have been motivated to combine the teachings of Zuk with that of Sheppard and/or Mian. Applicants thus contend that the Examiner has engaged in an improper hindsight reconstruction, picking and choosing from multiple references that differ in their teachings. "One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to depreciate the claimed invention." *In re Fina*, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988).

Still further, Applicants can not find a suggestion or teaching of a microfabricated device having a hydrophobic valve as defined in 22. Thus, if the Examiner maintains the rejection, the courts have required that the Examiner show some suggestion or motivation, excluding the invention itself, to make the new combination. See *In re Rouffet*, 149 F.3d 1350, 1355-56 (Fed. Cir. 1998); *In re Lee* 277 F. 2d 1338, 61 USPQ 2d 1430 (Fed. Cir. 2002); and c.f. *Ruiz v. A.B. Chance Co.*, F.3d 1270 (Fed. Cir. 2004).

Applicants remind the Examiner that a *prima facie* case necessitates disclosure of the source for either a suggestion or motivation to modify a reference to produce the present invention, and a reasonable expectation of success of producing the present invention. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438, (Fed. Cir. 1991). Zuk teaches flowpaths and chambers that are completely hydrophobic and large enough for a liquid aliquot introduced into the flow path to form a bead instead of flowing downstream; thus, there is no flow until an external pressure is applied. A teaching of fluid retention or no flow of fluids in a completely hydrophobic flow path does not provide a reasonable expectation of success for

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one of skill in the art to design a valve in the form of a simple local region of hydrophobicity within a chamber or channel. Such modifications would require undue experimentation for one of skill in the art; thus neither Zuk nor Sheppard or Mian provide a reasonable expectation of success, and thus fail to meet all the requirements to establish a *prima facie* case of obviousness.

In view of the above, Applicants assert that neither Zuk, Sheppard or Mian teach or suggest a localized region of hydrophobicity and therefore can't teach a valve in the form of local region of hydrophobicity. Thus, the cited references fail to teach or suggest all the elements of independent claim 22 as required by *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

With respect to claims 23, 24, 25, 33, 34, 35 and 36-38, Applicants remind the Examiner that these are dependent claims that incorporate all the limitations of independent claim 22. As indicated by the courts, if an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

In view of the above, Applicants respectfully request that the rejection be withdrawn.

B. Claim 21, 26 and 29-32

Claims 21, 26 and 29-32 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sheppard, Jr et al. (US 6,143, 247) in view of Mian et al. (US 6,319,469) and Zuk et al. (WO 97/07993) taken further in view of Chen et al. (US 5,822,788). Applicants respectfully traverse.

With respect to claims 21, 26 and 29-32, Applicants remind the Examiner that these are dependent claims that incorporate all the limitations of independent claim 22. As indicated by the courts, if an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Thus, Applicants respectfully request that the rejection be withdrawn.

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C. Claim 27 and 28

Claims 27 and 28 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sheppard, Jr et al. (US 6,143, 247) in view of Mian et al. (US 6,319,469) Zuk et al. (WO 97/07993) and Chen et al. (US 5,822,788) and taken further in view of Wolfe et al. (US 5,190,879). Applicants respectfully traverse.

With respect to claims 27 and 28, Applicants remind the Examiner that these are dependent claims that incorporate all the limitations of independent claim 22. As indicated by the courts, if an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Thus, Applicants respectfully request that the rejection be withdrawn.

D. Claims 39 and 40

Claims 39 and 40 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sheppard, Jr et al. (US 6,143, 247) in view of Mian et al. (US 6,319,469) Zuk et al. (WO 97/07993) and taken further in view of Cook (WO9426413). Applicants respectfully traverse.

With respect to claims 39 and 40, Applicants remind the Examiner that these are dependent claims that incorporate all the limitations of independent claim 22. As indicated by the courts, if an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Thus, Applicants respectfully request that the rejection be withdrawn.

**CONCLUSION**

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 06-2375, under Order No. HO-P02190US0 from which the undersigned is authorized to draw.

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Respectfully submitted,

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